

Instrumentation Laboratory
Massachusetts Institute of Technology
Cambridge, Massachusetts

COLOSSUS MEMO #240
LUMINARY MEMO #132 } REVISION #1

To: Distribution

From: K.W. Greene

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Subject: Definitions and Usages of PCRs,
PCNs, Anomalies and ACBs - Revision #1

In order to maintain control of the contents of Apollo Guidance Computer Flight Programs, there are four (4) forms that are used to authorize changes to a program or the specification. Each form has its own unique function. The following is a description of that function and how the form is employed in the overall system of controlling program and/or specification content.

I. Program Change Request (PCR)

A Program Change Request (PCR) is a request submitted by the originator to change the specification (GSOP) as indicated on the PCR form for the reasons listed. PCRs go through several steps from the time of origin to final approval by NASA for implementation. For a detailed description of this flow, see E-2345, "Software Configuration Management Plan."

II. Program Change Notice (PCN)

A Program Change Notice (PCN) is similar to a PCR except that a PCN is a notice of a change being made to the specification (GSOP) and not a request for a change as in the case of a PCR. A PCN is utilized for notification of clerical corrections, or a notification that a change is to be incorporated into the specification without which further program development could not proceed. As can be seen by the definition above, a PCN is employed as a fast preliminary-authorization and notification of a mandatory change or clerical corrections prior to approval by the formal Software Change Control Board (SCB). The MIT/IL Project Managers shall inform the NASA/FSB Program Engineers of PCNs being implemented. The use of PCNs to authorize changes has some risk involved in that formal SCB action might be to "disapprove" the PCN which then would require undoing all that had been authorized by the change. For this reason, the number of PCNs should be kept to a minimum.

III. Anomalies

"Anomalies" are a report of deviation in expected performance, program irregularities or amplifications arising out of testing and inspection after program release (Level 6 testing). Such anomalies are controlled by submitting to MSC/FSB a detailed description of the anomaly, its causes and effect and recommendations for effective action. The disposition of anomalies is usually to fix in the next program release and write a program note for the program that contains the anomaly. When the decision is made to fix the anomaly in a program, the authorization may be given in one of two ways:

1. If the anomaly has no affect on the GSOP, then a routing slip is attached to the anomaly with direction to fix the anomaly.
2. If the anomaly has GSOP impact, then a PCR (in some cases, a PCN) is prepared and processed in the normal manner and the PCR is the authorization to fix the GSOP and the program.

IV. Assembly Control Board Request (ACB)

The Assembly Control Board Request (ACB) is used internally within MIT/IL to authorize changes to the assembly that are not specified in the GSOP or considered an anomaly. ACBs are utilized to conserve coding, thus providing additional room for other authorized changes, to improve program efficiency, etc. ACBs require the approval of the Mission Program Development Director (M. Hamilton) prior to implementation and are reviewed by the Colossus or Luminary Project Manager (S. Copps/R. Larson) upon receipt of their copy.

V. General

PCRs, PCNs and Anomalies are distributed internally at MIT/IL for information purposes before the final decision to implement has been determined. Care should be exercised to prevent premature implementation before authorization has been received. PCRs, PCNs and Anomalies should not be implemented into the coding or the GSOP until a copy of the PCR, PCN or Anomaly is received with a routing slip attached, reviewed by the Mission Program Development Director (M. Hamilton) and signed by the Colossus or Luminary Project Manager (S. Copps/R. Larson), authorizing implementation.

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